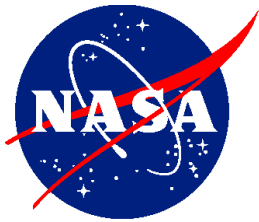NASA/SP-2016-3406

Integrated Baseline Review (IBR) Handbook

National Aeronautics and Space Administration
NASA Headquarters
Washington, D.C. 20546

March 2016

NASA STI Program ... in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) program plays a key part in helping NASA maintain this important role.

The NASA STI program operates under the auspices of the Agency Chief Information Officer. It collects, organizes, provides for archiving, and disseminates NASA's STI. The NASA STI program provides access to the NASA Aeronautics and Space Database and its public interface, the NASA Technical Report Server, thus providing one of the largest collections of aeronautical and space science STI in the world. Results are published in both non-NASA channels and by NASA in the NASA STI Report Series, which includes the following report types:

- TECHNICAL PUBLICATIONS. Reports of completed research or a major significant phase of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. They are NASA counterparts of peer-reviewed formal professional papers, but have less stringent limitations on manuscript length and extent of graphic presentations.

- TECHNICAL MEMORANDA. Scientific and technical findings that are preliminary or of specialized interest, e.g., "quick-release" reports, working papers, and bibliographies that contain minimal annotation. They do not contain extensive analysis.

- CONTRACTOR REPORTS. Scientific and technical findings by NASA-sponsored contractors and grantees.

- CONFERENCE PUBLICATIONS. Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.
- SPECIAL PUBLICATIONS. Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.
- TECHNICAL TRANSLATIONS. English-language translations of foreign scientific and technical material pertinent to NASA's mission. Specialized services also include creating custom thesauri, building customized databases, and organizing and publishing research results.

For more information about the NASA STI program, see the following:

- Access the NASA STI program home page at http://www.sti.nasa.gov.
- E-mail your question via the internet to help@sti.nasa.gov.
- Fax your question to the NASA STI Help Desk at 443-757-5803.
- Telephone the NASA STI Help Desk at 443-757-5802.

Write to:
NASA STI Help Desk
NASA Center for AeroSpace Information
7121 Standard Drive
Hanover, MD 21076-1320

NASA/SP-2016-3406
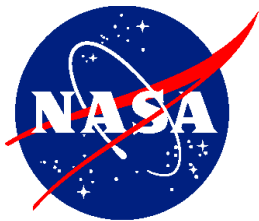
Integrated Baseline Review (IBR) Handbook

National Aeronautics and Space Administration
NASA Headquarters
Washington, D.C. 20546

March 2016

Electronic copies are available from

NASA Center for AeroSpace Information
7115 Standard Drive
Hanover, MD 21076-1320
http://ntrs.nasa.gov/

NASA Engineering Network (NEN)
Community Home Program/Project
Management
https://nen.nasa.gov/web/pm (inside the
NASA firewall only)

Table of Contents

RECORD OF REVISIONS		
REV LTR	**DESCRIPTION**	**DATE**
A	Basic Issue	June 30, 2005
B	First Revision	July 7, 2006
C	Second Revision	October 5, 2009
D	Third Revision	January 7, 2010
E	Fourth Revision	March 23, 2016

P.0 PREFACE

P.1 Purpose

The purpose of this handbook is intended to be a how-to guide to prepare for, conduct, and close-out an Integrated Baseline Review (IBR). It discusses the steps that should be considered, describes roles and responsibilities, tips for tailoring the IBR based on risk, cost, and need for management insight, and provides lessons learned from past IBRs. Appendices contain example documentation typically used in connection with an IBR. Note that these appendices are examples only, and should be tailored to meet the needs of individual projects and contracts.

Following the guidance in this handbook will help customers and suppliers preparing for an IBR understand the expectations of the IBR, and ensure that the IBR meets the requirements for both in-house and contract efforts.

P.2 Applicability

The objectives of an IBR are applicable and beneficial to projects and contracts of all sizes and types. However, the level of detail and formality of the review vary based on dollar value, risk, and need for management insight. The Mission Directorate may impose unique guidelines for the IBR.

NASA has many reviews during the program and project lifecycles, and some of these reviews share common goals and objectives with an IBR. Therefore, an IBR can be combined with these other reviews. The IBR Team Leader should determine if the Decision Authority or Technical Authority have prepared a Terms of Reference (ToR) for the project. The IBR should be consistent with the Terms of Reference and assure that an adequate level of detailed information and analysis is provided to the Decision Authority and Technical Authority. It is important to ensure that the intent of the IBR is still met with adequate time, and supported by key personnel when reviews are consolidated.

P.3 Authority

This handbook provides Earned Value Management (EVM) guidance for NASA Headquarters, NASA Centers, the Jet Propulsion Laboratory (JPL), government partners, academic institutions, international partners, and contractors to the extent specified in the contract or agreement.

The following provide more information on EVM policy and requirements:

- NASA Federal Acquisition Regulation Supplement (NFS) 1834.201, *Earned Value Management System Policy*
- NASA Policy Directive (NPD) 1000.0*, NASA* Governance and Strategic Management Handbook
- NPD 1000.5, *Policy for NASA Acquisition*
- NPD 7120.4, *NASA Engineering and Program/Project Management Policy*
- NASA Procedural Requirements (NPR) 7120.5, *NASA Space Flight Program/Project Management Requirements*

- NPR 7120.7, *NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements*
- NPR 7120.8, *NASA Research and Technology Program and Project Management Requirements*

P.4 Terminology Context

This handbook serves two roles regarding contractor IBRs and in-house project IBRs. Rather than confusing the terminology, some terms will be consolidated but it is important for the reader to understand the differences. The term "customer" is the organization buying the product or service and is most oftentimes the NASA Mission Directorate, program, or project. The term "supplier" is the organization that is the source for the products or services and can be a contractor, grantee, another NASA Center, university, international partner, or other government agency. The "CAM" acronym herein refers to both the government P-CAM and industry CAM in regards to EVM.

P.5 References

- NASA EVM website, http://evm.nasa.gov/
- NASA Engineering Network (NEN), Program/Project Management, EVM Sub-Community, https://nen.nasa.gov/web/pm/evm (inside the NASA firewall only)
- NASA Special Publication, *NASA/SP 3403, NASA Schedule Management Handbook*
- *NASA Space Flight Program and Project Management Handbook*
- NASA/SP 3404, *NASA Work Breakdown Structure (WBS) Handbook*
- NASA/SP 599, *NASA Earned Value Management Implementation Handbook*
- NASA/SP 3704, *NASA Earned Value Management System Description*
- Electronic Industries Alliance Standard (EIA-748), *Earned Value Management Systems*
- National Defense Industrial Association (NDIA) Integrated Program Management Division, *Guide to the Integrated Baseline Review (IBR)*, Revision 2, February 6, 2015

P.6 Point of Contact

The primary point of contact for this handbook is NASA's EVM Program Executive, Jerald G. Kerby, from the Office of Strategic Analysis and Communications, Marshall Space Flight Center, (256) 544-3243, jerald.g.kerby@nasa.gov.

Organizational EVM Focal Points (EVMFPs) may also be consulted for assistance with EVM/IBR support. The listing of applicable EVMFPs is located on the NASA EVM website, http://evm.nasa.gov/council.html.

1.0 INTRODUCTION

1.1 Background

The purpose of the IBR is to achieve a mutual understanding of the baseline plan and its relationship to the underlying EVMS and processes that will operate during the life cycle of a project. The objectives are to gain insight into cost, schedule, technical, resource, and management process risk areas, as well as, develop confidence in the project's operating plans. This will be accomplished by evaluating the Performance Measurement Baseline (PMB) to ensure it captures the entire technical scope of work, is consistent with schedule requirements, has adequate resources assigned, and has sound management processes.

According to NPR 7120.5, an IBR is defined as a risk-based review conducted by program/project management to ensure a mutual understanding between the customer and supplier of the risks inherent in the supplier's PMB and to ensure that the PMB is realistic for accomplishing all of the authorized work within the authorized schedule and budget.

The PMB is defined as the time-phased cost plan for accomplishing all authorized work scope in a project's life cycle, which includes both NASA internal costs and supplier costs. The project's performance against the PMB is measured using EVM, if required, or other Performance Measurement Techniques (PMTs), if EVM is not required. The PMB does not include Management Reserve (MR) or Unallocated Future Expense (UFE).

IBRs are required whenever EVM is required.

- For contracts, IBRs will typically be conducted within 180 calendar days after contract award (if a pre-award IBR has not been conducted), or exercise of significant options, or within 60 calendar days after incorporation of major modifications. (NFS 1834.201 and 1852.234-2).
- For projects requiring EVM, Mission Directorates shall conduct a pre-approval integrated baseline review as part of their preparations for KDP C to ensure that the project's work is properly linked with its cost, schedule, and risk and that the management processes are in place to conduct project-level EVM.

IBRs are required when the PMB is first established, and whenever changes to the baseline (e.g. to scope, or to the parties' understanding of the risks, work, schedule or budget) become significant enough that a new mutual understanding is needed. The project phase is not a consideration.

While risks may be identified and actions tracked as a result of the IBR, it is important to note that an IBR is not a pass/fail event. Completion is contingent on meeting the IBR objectives and the readiness of the supplier. Delta IBRs are typically the result of poor planning (i.e., incomplete/immature cost, schedule, technical content of the PMB, etc.). Thus, it is paramount that the customer ensures the supplier's readiness to conduct an IBR upfront. The objectives and benefits of the IBR are to:

- Promote customer and supplier knowledge of the PMB
- Improve communications by enabling a comparison of customer and supplier understanding of technical/schedule/cost objectives and identification of any differences so they can be addressed.

- Determine that the PMB covers the entire scope of work, is realistic, and supports achieving all technical/schedule/cost objectives.
- Provide a thorough understanding of the PMB and its risks, enabling early intervention to mitigate risks, and to exploit opportunities.
- Verify that technical performance goals or functional exit criteria are clearly defined, agreed upon, and documented.
- Ensure meaningful and reliable performance measurement techniques are employed.
- Assess the PMB ability to provide timely, reliable, and actionable schedule, cost, scope, and risk reduction activities and associated costs.
- Provide the Customer with an understanding of the supplier's processes for effective and integrated technical/schedule/cost management and measurement.

An IBR is part of the supplier's management processes. Anything that does not support the intent of the IBR should be moved outside the review. Any risks associated with technical, schedule, cost, resource, and management processes that are identified during the IBR should be reviewed and incorporated into the project's existing risk management process.

1.2   Pre-approval Integrated Baseline Review

The NPR 7120.5, Section 2.2.8.2 states: "For projects requiring EVM, Mission Directorates shall conduct a Pre-approval IBR as part of their preparations for KDP C to ensure that the project's work is properly linked with its cost, schedule, and risk and that the management processes are in place to conduct project-level EVM." Each mission directorate has the latitude to determine how best to meet this requirement, so it is imperative to check with the mission directorate for specifics. The Science Mission Directorate has determined the following approach and is listed here to give you guidance regarding the Pre-approval IBR process.

Because EVM data is not typically available until Phase C, the Pre-approval IBR focuses on ensuring the capabilities and processes required for effective program control are in place, or will be in place by the start of project implementation. At this point in the project, prior to KDP C, the focus is not on the details of the PMB itself, but on: (1) how the baseline was/is to be established; (2) whether the project's structure and program control systems, including the EVMS are in sync, are comprehensive, and provide sufficient insight into element and project performance; and (3) whether the project management team has the knowledge and understanding of both the project cost/schedule/technical content risks and the chosen PMTs to be used after the KDP C to assess performance against the established baseline. To ensure that this third review requirement is met, the project should present a robust, but preliminary, technical and programmatic baseline for the project and its major elements, recognizing that the details of that baseline might change between the Pre-approval IBR and the traditional IBR activities following KDP C.

It is anticipated that the majority of this evaluation can be accomplished during Preliminary Design Review (PDR), independent reviews, such as the Standing Review Board (SRB), and during the Program Planning & Control (PP&C)/EVM Assessments which are already required of each project. The PP&C/EVM Assessment is conducted beginning at KDP B and each subsequent KDP on the preliminary PMB planning. Most of the data products required for Pre-approval IBRs are already required for the independent reviews at PDR, so there is little added work or burden to the project teams to produce these products. The PP&C/EVM assessment may require additional involvement

of EVM subject matter experts to help supplement the independent review teams in reviewing the data products.

There is also a need to enhance the PDR to include more in-depth briefings by technical managers of the programmatic content of their work scope (i.e., Basis of Estimate (BOE), cost plan, schedule, assumptions, etc.). This enhancement to the PDR is required to ensure that each technical lead and/or subsystem manager has robust programmatic plans and complete understanding of those plans, and that they can demonstrate that the plans are realistic and sound. This is a separate requirement from the Pre-approval IBR of the program approach and methodology, though it would be difficult to have effective methods without sound plans and programmatic understanding, and vice-versa.

A sound BOE is required to establish a good PMB. To provide a sound BOE as part of the enhanced 7120.5 PDR requirement, it is essential that each technical lead (a.k.a., sub-system manager, control account manager, etc.) take ownership of their estimates, present their technical implementation plans at the PDR and discuss how the cost and schedule plans are linked to that technical approach. The Technical Lead should also describe how the cost and schedule plans are supported by comparison to analogous historical developments to substantiate the adequacy of the requested resources. The risk posture of the element should also be presented, as that input is essential in determining the appropriate UFE (a.k.a., reserve, contingency, or margin) levels to be held by the program or project. At the project level, all the estimates should be linked together and the UFE allocated based on the risk posture identified by the technical leads. This presentation of the project's plan demonstrates traceability from the technical implementation plan to the proposed cost and schedule, to the risk and associated UFE that will be needed. The PDR presentations will demonstrate that each technical lead has a robust plan and has signed up to deliver their element for the allocated resources. This process will provide the independent reviewers adequate data to provide feedback on the allocation of resources, and will allow adjustments to be made prior to confirmation.

Finally, after KDP C there will be a detailed review of the project's plan similar to what is normally done at a traditional IBR, but at the project level, not at the contract level. Although, results of contract IBRs should be included in the project IBR materials. This activity is focused on the details of the project's planning to ensure the validity of the PMB, and seek a deeper understanding of cost, schedule, technical, risks, and management processes. Typically this review will be held within 180 days after KDP C, and any changes documented.

2.0   IBR PREPARATION

2.1   General

Preparation is the foundation for a meaningful IBR. The preparation portion of the IBR is the most important part of the entire process. Preparation includes the planning that identifies key responsibilities, required technical expertise, IBR and/or EVM training, review dates, review scope, risk evaluation criteria, documentation needs, disposition of findings, and procedures for risk identification, documentation, and incorporation into the project's risk management planning.

The IBR process will include the activities listed below.

- A review of the documentation that establishes the current and baseline plan will occur prior to and during the IBR. This will include technical scope, cost estimates to complete (ETC's), basis of estimates, budgets, resource plans, schedules, PMTs, etc. Concern Area Reports (CARs) will be generated and submitted as a result of the pre-approval IBR and contractor IBRs findings.
- IBR training to familiarize the review team with the IBR process, purpose, and documentation. Also, a supplier discussion regarding expectations of the IBR is recommended.
- A short in-brief by the customer/supplier consisting of the project overview, intent of the on-site review, agenda, and a discussion of the business/EVM process.
- Discussions with selected CAMs to verify the adequacy and risk related to work authorizations, budgets, ETC's, current and baseline schedules, etc.
- Sub-team evaluations, risk assessments, action items, and preparation of CARs required and team meetings (caucuses) to discuss results of the CAM discussions.
- An out-brief by the customer to the supplier covering the results and findings of the IBR.

2.2   Determination of IBR Need

The need for an IBR on contract(s) must be determined early during the Formulation Phase and included in any Requests for Proposals (RFPs). Identification of IBR requirements on in-house work should be identified within the program and project plan. The requirement for contract IBRs is contained in NASA Federal Acquisition Regulation (FAR) Part 1852. The requirement for Pre-approval IBRs is contained in NPR 7120.5. In addition, the mission directorate may establish unique IBR requirements and thresholds that must be followed. The project plan should identify the contracts and in-house work that will require an IBR, including flow-down of IBR requirements to major subcontractors. An IBR may also be planned for efforts that do not meet the dollar thresholds in 7120.5, but that have significant risk or require more management attention at the discretion of the Program and/or Project Manager.

Including the clause at NASA FAR Supplement (NFS) 1852.234-2 in a solicitation will notify potential bidders of NASA's intent to conduct IBRs. In addition to that clause, or in a case where the clause is not included in the RFP or contract, it is a good idea to provide suppliers with more details about the expectations of the IBR in the Statement of Work (SOW). This will ensure that clear expectations are established and provide NASA the ability to tailor IBR requirements.

2.3 IBR Planning

The customer should begin preparation for the IBR as soon as practical after determining the need for an IBR. The Program or Project Manager should appoint an IBR Coordinator and a Review Facilitator early to help plan and conduct the IBR. The IBR Coordinator helps coordinate various activities to ensure an efficient IBR. The Review Facilitator provides EVM expertise to the team. The roles of the IBR Coordinator and Review Facilitator are further described below. See **Appendix B** for a checklist of IBR activities.

The first step in planning the IBR is to determine which Control Accounts (CAs) will be reviewed at the IBR. A Responsibility Assignment Matrix (RAM) that shows the budget separately broken out for each CA will help in this assessment. See **Appendix C** for a sample dollarized RAM. The dollarized RAM or equivalent document must be requested from the supplier early on to help with the planning. Typically 85% of the total dollar value and all of the high risk CAs should be examined. Usually, at least one Level of Effort (LOE) and one material account will be included to provide insight into various aspects of the project. The Program or Project Manager, with advice from the Review Facilitator, should choose the CAs for the IBR and inform the supplier of the ones selected. This will also form the basis of the IBR agenda. See **Appendix D** for an example agenda.

Team composition and assignments are based on which CAs are selected for review. Participants should be identified based on their expertise as required for the review. These disciplines include program and project management, business management, procurement and technical management (e.g., system engineering, software engineering, manufacturing, integration and test engineering, and integrated logistics support). When appropriate, the team may include subcontractor, Defense Contract Management Agency (DCMA), and Defense Contract Audit Agency (DCAA) personnel. There may be several sub-teams with discussions scheduled concurrently, or one team may hold discussions with every CAM. Each of these teams should be assigned a sub-team leader to lead the discussion. To be effective, the discussion group should remain small and focused, usually 3-4 people per team. Typically, the technical leads (CAM counterparts) for NASA will lead the discussion. A sample team may consist of an EVM analyst, scheduler, business office rep and one or two technical experts in the area of the CA to be discussed. A good rule of thumb is to allow at least two hours to conduct the CAM discussions and one hour for completing documentation.

2.4 Customer Team Roles and Responsibilities

The IBR Team is a multi-functional team approach that affords the opportunity to leverage knowledge and experience in the areas of technical, cost, schedule, and risk to ensure all areas are addressed during the IBR. Team members are expected to:

- Attend and participate in meetings
- Attend training sessions to prepare for the documentation review
- Attend on-site/in-house review
- Become familiar with the contractor's and/or in-house project's control account documentation and any other supplementary information provided
- Understand assigned roles and responsibilities in the review and be willing to carry out these responsibilities

- Prepare and submit findings in a timely manner. Ensure that all findings are documented by factual evidence
- Assist the Team Leader in the preparation of the out-brief and final report

Program or Project Manager (PM)/Team Leader: The PM either acts as or assigns the Team Leader for the IBR. The overall responsibility of conducting the IBR lies with the Team Leader. The Team Leader is responsible for coordinating the activities of all individuals assigned to perform the review. Some individual tasks to be performed by the Team Leader are described below.

- Coordinate with the supplier to discuss the IBR strategy, areas to be reviewed, and tentative dates for the IBR.
- Choose appropriate team members and assign responsibilities.
- Ensure team members are adequately trained and prepared.
- Provide technical direction and leadership emphasizing the importance of thorough cost, schedule and technical integration of work.
- Provide an in-brief and out-brief at the IBR.
- Provide an overall evaluation of the IBR and assess whether or not a follow-on review will be required.
- Approve review findings. The format of this documentation is at the discretion of the Team Leader.
- Ensure that all issues identified during the review are resolved in an appropriate and timely manner.
- Assign action items and completion dates to appropriate government and supplier personnel. Schedule action item review as necessary.
- Define the risk evaluation criteria to generally categorize the risk that may be identified at an IBR: cost, schedule, technical, resource, and management processes.

IBR Coordinator: The Team Leader may appoint an individual as IBR Coordinator whose function entails coordination of various activities to ensure an efficient IBR. This includes, but is not limited to, coordinating review dates, obtaining and organizing information necessary for the review, and coordinating the various aspects among the government and supplier review participants. The following is a recommended guide to assist the coordinator in performing this role:

- Assist Team Leader to coordinate the review dates that are amenable to all parties. Consideration should be given to a time period that is the least disruptive to ongoing activities. Scheduling the review after the product submissions are received after the close of the accounting period is normally the most appropriate time.
- Provide written notification of the IBR to the supplier, if applicable. Send the letter to all of the team members for informational purposes. In the case of a contract IBR, typically the contracting officer would send the notification letter. See **Appendix A** for a sample IBR Notification Letter.
- Obtain a list of the IBR team members from the Team Leader.
- Coordinate with individual team members to ensure travel and security arrangements have been accomplished. If possible, non-escort badges for the IBR Team.
- Ensure supplier has adequate meeting space, projectors, phone, internet, etc. and, if possible, non-escort badges.

- Collect information and data requested in the IBR notification letter; compile and sort the information by sub-team responsibilities; and make this information available to the IBR team members.
- Assist Team Leader by coordinating IBR/EVM training for the team members.
- Schedule an IBR kick-off meeting to allow team members to familiarize themselves with the documentation and develop questions to be addressed during the review.
- Determine if hardcopy or electronic IBR Team Notebook is necessary. At a minimum it should contain:
    - Agenda/Discussion Schedule
    - Team Assignments
    - Statement of Work/Project Plan
    - WBS & WBS Dictionary
    - OBS
    - Dollarized RAM
    - CAM Findings
    - IMS Findings (i.e., Health Check)
    - EVMS System Description/Implementation Plan
    - Discussion Guidelines
    - Sample CAM Questions
    - Documentation Guidelines
    - Sample Documentation
    - Risks and Risk Evaluation Criteria
- Collect the IBR CAR forms. Forward those deemed appropriate by the Team Leader to the supplier for resolution.
- Distribute IBR forms, either hardcopy or electronic format, to team members prior to CAM discussions.
- Collect documentation at the IBR.
- Establish and maintain an IBR log.

Review Facilitator: Duties and responsibilities of the IBR Review Facilitator include providing the team members with EVM expertise. This is accomplished through the review of documentation, assessing earned value status, and interpreting issues that relate to overall EVM. The Review Facilitator should be an EVMFP from the applicable Center if possible. The items listed below are provided as a recommended guide to assist the facilitator in the accomplishment of this role.

- Determine status of the EVM system. If applicable, request documentation showing that the EVM system has been previously accepted by the government. When applicable, contact the local DCMA representative to determine if there are any outstanding earned value management system problems that would affect the quality of the performance measurement data.
- If the EVM system requires previous government acceptance and has not met that requirement, coordinate with appropriate personnel the means by which this acceptance can be accomplished.
- Review management processes that will be used in the management of the work.
- Provide EVM expertise to the IBR Team by assisting team members in the understanding of any EVMS data obtained prior to the review.
- Coordinate with the Team Leader and IBR Coordinator in determining the agenda/CAM discussion schedule.

- Review the experience and background of the team participants and provide a recommendation to the Team Leader of the type and amount of EV training deemed necessary.
- Provide assistance to IBR Team members in determining whether individual tasks have been assigned appropriate PMTs used for measuring progress.
- Assist the team leader in the development of the risk evaluation criteria.
- The IBR Facilitator reviews all action items generated to ensure that earned value issues requiring follow-up are appropriate and necessary.
- Provide assistance to the Team Leader with the preparation of both the in-brief and out-brief.

Project-Control Account Manager (P-CAM) - a.k.a. Sub-team Technical Lead, CAM: The P-CAM is normally a technical expert who specializes in the CA(s) that are being addressed during the CAM discussions. Note: The government P-CAM is equivalent to CAM as mentioned in the preface. The responsibilities of the P-CAM include:

- Attend the pre-IBR meeting, including training and documentation review prior to the start of the IBR.
- Review documentation prior to baseline discussions with the CAM.
- Lead the discussions of CAM and senior managers, or participate if program-led IBR.
- Establish the strategy for conducting the CAM discussions, if applicable.
- Ensure all applicable IBR documentation is properly completed (i.e. discussion assessment form, CAR form, documentation request form, and risk assessment form).
- Support daily out-briefs to the IBR Team.
- Provide an assessment of risk based on the prescribed risk evaluation criteria.
- Assist in the preparation of the IBR out-brief, if necessary.

Subject Matter Expert (SME) Team Members: Team members may include technical experts, EVM analysts, procurement representatives, as well as other personnel who may be of benefit during the review. Duties of team members include:

- Attend the pre-IBR meeting, including training and documentation review, prior to the start of the IBR.
- Review documentation prior to baseline discussions with the supplier.
- Participate in senior management discussions.
- Provide an assessment of risk based on the prescribed risk evaluation criteria.
- Assist in completing all applicable IBR documentation.
- Assist in the preparation of the IBR out-brief.

Schedule Analyst: The duties of the Schedule Analyst include:

- Attend the pre-IBR meeting, including training and documentation review prior to the start of the IBR.
- Review documentation prior to baseline discussions with the CAM.
- Participate in CAM and senior management discussions.
- Review the EVM System Description or management processes to understand the processes and procedures by which the Integrated Master Schedule (IMS) is created and maintained.

- Provide IMS analysis and assessment report, to include performing a schedule health check(s) and other schedule metrics. Recommend using the NASA Schedule Test and Assessment Tool (STAT), if available.
- Provide an assessment of all project risk based on the defined risk evaluation criteria.
- Assist in completing all IBR documentation.
- Assist in the preparation of the IBR out-brief.

Cost Analyst: The responsibilities of the Cost Analyst include:

- Attend the pre-IBR meeting, including training and documentation review prior to the start of the IBR.
- Review documentation prior to baseline discussions with the CAM.
- Provide insight into the reliability of the BOEs.
- Inform the team of any areas where the independent or non-advocate estimates differ from the customer estimates.
- Participate in CAM and senior management discussions.
- Provide an assessment of all project risk based on the defined risk evaluation criteria.
- Assist in completing all IBR documentation.
- Assist in the preparation of the IBR out-brief.

It is also important to include trainees and observers as part of the IBR process. This is a good way to provide training to people who may need to participate in a future IBRs.

2.5 Determination of Readiness

Prior to the on-site IBR, the IBR Team must assess the readiness of both the customer and supplier to conduct an IBR. Below are some rules of thumb to help determine IBR readiness.

- The PMB should reflect the entire scope of work.
- The schedules should reflect the entire scope of work.
- If possible, to have at least three reporting cycles worth of EVM data before the IBR for trending purposes. This will provide the IBR Team with some performance measurement data, as well as a feel for the accuracy of the data.
- Look for detail planning to the work package level for six months to one year to ensure an adequate assessment of the baseline.

The IBR Team must measure the ability of the supplier to meet the intended objectives prior to conducting the on-site IBR. The IBR is not just putting a check in the box. If after the IBR, the Program or Project Manager does not feel that the IBR met the objectives, a delta IBR should be performed. Adequate customer preparation is essential to ensuring a meaningful IBR. This includes ensuring proper training was conducted and adequate time was allowed for the data review.

2.6 IBR Notification Letter/Documentation

An IBR notification letter should be prepared and sent to the supplier within three months of the scheduled on-site IBR. This notification letter can take any form but should include the following information: the purpose of the review, the timeframe of the review, the agenda, documentation requested, team requirements (example: projector, phone/internet access, meeting rooms, etc.), IBR team members and roles, and points of contact for follow-up. See **Appendix A** for a sample IBR notification letter. For contracts and subcontracts, the IBR notification letter should be sent from the government Contracting Officer Representative (COR) to the contractor organization. The local DCMA and DCAA organization, if applicable, should also be informed of the IBR.

One of the main functions of the IBR notification letter is to request documentation for use on-site and prior to the IBR, so that the team can prepare. This documentation will be used by the team to identify risk areas and to develop preliminary questions for the on-site IBR, and should be received two to four weeks prior to the on-site IBR. The following is a listing of some of the documentation that may be requested, and is not all-inclusive:

- Work Breakdown Structure (WBS) and WBS Dictionary to the control account level
- Organizational Breakdown Structure (OBS) to the CAM level
- Time-phased Control Account Plans (CAP) to include work packages, the PMT used to assess performance, period of performance dates for each work package, and the specific resources assigned to each work package.
- BOE with assumptions, and risk
- Work Authorization Documents (WADs), all levels
- Performance measurement reports (internal cost/schedule reports)
- Estimate at Completion (EAC) with supporting documentation
- Control Account (CA)/Work Package (WP) summary containing:
    a. Number of work packages by type of PMT
    b. Longest CA, shortest CA, mean and median duration, total value of account
    c. Largest CA, smallest CA, mean and median values
    d. Percentage of discrete vs. LOE for entire project
- Budget Logs (MR, Undistributed Budget (UB), Contract Budget Base (CBB) or Project Budget Base (PBB), Estimated Actuals, Baseline Change Requests (BCRs)
- Project Plan with major deliverables/Statement of Work (SOW) with WBS matrix for tracing purposes
- IMS (master, intermediate, and detailed) with critical path(s) identified and schedule margin
- EVM System Description and Project EVM Implementation Plan
- Financial management reports such as NASA Form 533 Monthly / Quarterly or equivalent
- Integrated Program Management Reports (IPMRs)
- RAM showing budget by control account
- Subcontractor listing and value of subcontracts
- Internal re-planning documentation
- Contractor/subcontractor flow-down requirements

- Risk list from Risk Management System with mitigation plans
- Key Risks and Opportunities as defined in the Risk and Opportunity Management Plan
- EVM software tools (i.e., Empower, wInsight, etc.) metric analysis
- Schedule Risk Assessment Results
- Critical Path Identification and Analysis
- Material High/Low Dollar Threshold Breakdown
- Critical Materials List

Request only the data that have not already been received. Also, this list should be tailored based on information required for preparation and insight. The supplier may have the data described above in different formats, and these documents are acceptable and even preferred as replacements when the information is sufficient.

Once the documentation is received, the next step is for the IBR Team to evaluate this documentation and determine risk areas. This evaluation of documentation, as well as other activities, can be conducted at a pre-IBR meeting. Questions may be held for discussion at the IBR or can be provided to the supplier prior to the IBR, allowing time to respond prior to the on-site IBR. The questions can be informal or documented. If the documentation review uncovers new risk areas, those CAs should be added to the review schedule.

2.7 Training

Training should be conducted at a pre-IBR meeting. The three components of the training are basic EVM, IBR, and an overview of/by the supplier. The supplier can be a great help during the pre-IBR meeting by explaining documentation and answering any preliminary team questions. The supplier personnel can also give the team an understanding of management processes, such as baseline maintenance, risk management, and other business processes including EVM, that will be used to manage the project. Note that while EVM processes are discussed at an IBR, the IBR is not an EVM compliance review.

Training may be obtained from various sources and should be tailored based upon the needs and experience of the individual members of the review team. Training sources may be found by contacting the local NASA Training Coordinator or the NASA EVMFP. Names of members and contact information are listed on the NASA EVM website at http://evm.nasa.gov.

The training and documentation review should occur prior to the on-site IBR. This will help to ensure an efficient IBR, provide the team an opportunity to review the data for completeness, and ensure readiness of the supplier. If the team is not able to have ample training and preparation time prior to the on-site review, sufficient time needs to be allocated to accomplish these efforts. Conducting the training and documentation review on-site prior to the CAM discussions may also be done. If this is done, make sure to allow adequate time for the team members to complete a review of the documentation prior to the start of the IBR discussions.

2.8 IBR Logistics

Team members need to be informed as early as possible of the travel plans, review schedule, agenda, and their assignments. Additionally, team members should know the name and number of the IBR Coordinator, which should handle security arrangements needed to be made for each team member visiting a facility (i.e., Visit Requests need to be sent to the appropriate Security Office.). IBR Team members should also be provided area maps, directions to all facilities, to include the building and room where the initial meeting or in-briefing will be held. (see IBR Coordinator duties for more detailed information)

A certain amount of administrative/logistics is required to ensure an efficient IBR, and this effort will benefit all stakeholders. The supplier is requested to arrange the following for the Review Team's on-site presence during the review:

- All IBR team members are cleared for any security requirements, and that arrangements are in place for them to be collected and escorted, only if necessary while on-site.
- Provide adequate working area and collaborative work space.
- Schedules for discussions with CAMs and other project management staff and ensure all personnel are available.
- Conference rooms/offices for CAM discussions are available, supports the number of team members, and the appropriate equipment/network access is available for data traces and internet.

3.0   ON-SITE IBR

3.1   General

The preparation and planning done up to this point pay off at the on-site IBR. The primary purpose is for the customer and supplier to gain a mutual understanding of the risks inherent in the PMB and management processes. Anything that does not support this purpose should be discussed outside of the IBR. Any issues that arise during the IBR that are not resolved – without impact to the scheduled on-site activities – should be recorded, and resolved after the review.

The intent of this section is to provide sample tools and documentation for conducting the on-site IBR. While each IBR may be tailored, these tools will provide a starting point for conducting the review.

3.2   On-site Discussions

Once the IBR Team is on-site at the supplier's facility, several different activities occur. This section describes each of these activities and their role in making the IBR successful.

3.3   In-Briefs

3.3.1   Joint IBR Team and Supplier

The IBR team should provide an in-brief to the supplier at the start of the IBR. The main theme of this discussion is to re-emphasize that the purpose of the IBR is to evaluate the adequacy of the baseline and identify concerns, not to try to solve problems.

3.3.2   IBR Team-Only

The team may also want to conduct an IBR Team meeting before the CAM discussions begin. This meeting is the final opportunity to focus the IBR Team on the objectives.

3.3.3   CAM Discussions

The CAM discussions are the key events of the IBR. These discussions focus on key risk areas and management processes. During this period the team members should cover the key aspects of the planning of the work scope. Overall success of the IBR results, in part, through productive CAM discussions. Following the techniques and formats below will help to ensure that adequate information is obtained in a timely manner to accomplish the objectives of the IBR.

3.3.4   CAM Discussion Guidelines

Below is a list of suggested techniques for all team members to consider before and during the CAM discussions.

- Have an objective. What do you expect to gain from the discussion?
- What questions will you ask to achieve the objective?
- Prepare a tentative list of basic questions to serve as a framework for the discussion. This will open the way for spontaneous in-depth conversation and follow-up questions. See **Appendix E** for sample IBR questions.
- Designate a person (scribe) to take notes. You should also take notes when not speaking and compare during the team caucus.
- Prior to the CAM discussions, the IBR Team members should be familiar with areas previously identified for discussion. Review the documentation thoroughly.
- Prior to the discussion, conduct a basic data and documentation trace to become comfortable with the data and how it flows through the system.
- Introduce yourself and identify the organization you represent. You may also wish to indicate your team affiliation in the review.
- Be well prepared and maintain a tempo that keeps the discussion moving along toward satisfying your objective. Be friendly, but avoid long conversations extraneous to the discussion.
- Request copies of documents only if necessary to accomplish the objective of the discussion. If documentation is not readily available, complete a Documentation Request Form and submit it to the IBR Coordinator.
- Watch the time. Discussions are normally scheduled for two hours in length. Should additional time be required to complete the discussion, coordinate with the Team Leader.
- If disagreements arise which cannot be resolved, the team member should write a description of the disagreement in a CAR and submit it to the Team Leader for disposition. The Team Leader will handle any continuing discussion.
- The supplier must ensure that each CAM is well prepared (documentation available, understands documentation content, can support answers, etc.).
- Phrase questions that will require a detailed response. Avoid questions that may lead to a Yes/No response.
- Ensure CAM (not the support team) answers the questions. The CAM's support team may provide additional/supporting detail when requested by the discussion lead. If the CAM's answer is ill-defined or unclear, continue to probe with additional questions in the area of concern.
- Use "Show me" statements versus "tell me" statements. Have the CAM show answers in their CAM Notebook or eCAM Notebook.
- At the end of the discussion express thanks to the CAM and their team, and ask them to step outside the room so the team can caucus and summarize the discussion recapping follow-up actions and potential CAR(s).

3.3.5   IBR Documentation and Forms

After each CAM discussion, each Sub-team should sit down and review what was discussed. This is an opportune time to collect documentation to better prepare for the out-brief presentation. Each Sub-team Leader is responsible for documenting the team's assessments and findings. The Team Leader uses the documentation to support overall team assessments and required corrective actions.

The following forms have been developed to facilitate review documentation. Samples of these IBR forms are provided in the Appendices. Note that these are sample formats and program/project specific formats can be substituted.

Discussion Assessment Form: The Sub-team should complete one of these forms after each discussion. The Sub-team Technical Leader (CAM) is responsible for reviewing this form and submitting it to the Team Leader and the IBR Coordinator. Keep in mind that the Discussion Assessment Form can be tailored based on risk. See **Appendix F** for a sample of this form.

Concern Area Report (CAR) Form: A CAR should be completed for each concern noted. Generally, concerns noted are items that require follow-up action. Information on this form should be clear and as specific as possible because it will be provided to the supplier to obtain a response and resolution. Spell out abbreviations. These forms should be submitted immediately to the Team Leader, and as soon as practical to the supplier. Responses should be provided to the IBR Team as soon as possible. The Sub-team Leader is responsible for reviewing this form, and submitting it to the Team Leader and the IBR Coordinator. All forms will be compiled and logged. It should be noted that a CAR is a significant deficiency or discrepancy that warrants documentation and action. However, in the event that a resolution or disposition cannot be done, is disagreed with, or is refused, then an alternative should be presented and agreed upon by all parties. Ultimately the Program Office/Mission Directorate will make the final decision. See **Appendix G** for a sample of this form.

Documentation Request Form: During CAM discussions, the team may find that additional documentation is required to gain a better understanding of the issue in question. Use this form to obtain required documentation. Submit the completed form to the Team Leader and the IBR Coordinator. All forms will be tracked in order to reduce redundancies and ensure receipt of all the requested material. See **Appendix H** for a sample of this form.

Risk Assessment: A risk assessment should be completed after each discussion. Each risk and opportunity identified during the CAM discussion is assigned a probability of occurrence. A potential cost and schedule impact for each risk and opportunity should be estimated, and a determination made as to whether this risk has been accounted for in the baseline. Each risk is classified as cost, schedule, technical, resource, or management process and assigned a rating based on risk evaluation criteria established by the Team Leader prior to the IBR. The ultimate goal of the risk assessment area of the IBR is an updated EAC or Life Cycle Cost Estimate (LCCE) which incorporates quantified risks. See **Appendix I** for risk evaluation criteria.

All forms should be compiled and logged in an IBR Log. The IBR log should consist of both potential and actual issues revealed prior to and during the review, and should contain the appropriate actions required along with anticipated completion dates. This IBR Log will support the Letter of Findings during the IBR Close-Out Phase. See **Appendix J** for a sample of logs.

3.4 Out-Briefs

3.4.1 Daily Status

At the end of each day, the NASA IBR Team should conduct a team caucus where each team reports findings from the CAM discussions. This will ensure that the entire IBR team is aware of issues that have been raised by other teams, allowing further investigation during other CAM discussions.   It is at the discretion of the Team Leader if a supplier representative be a part of this meeting to help clarify any issues and/or address any needs. Ensure adequate time is allotted at the end of each day.

3.4.2 Out-Brief

The IBR Team is part of the development of the final out-brief where the team can discuss the concerns prior to briefing the supplier. This will ensure that the IBR Team members have a clear understanding of any concerns and action items. The agenda for the IBR must ensure that ample time is made available to prepare and present the out-brief presentation.

The Team Leader should out-brief the supplier at the end of the on-site IBR. The out-brief should be tailored for each contract or in-house work activity, however, several areas should be included: (1) the brief should include assessments of each control account discussed (pros and cons), as well as all CARs and action items, (2) a summary of the overall risk by areas, (3) the Team Leader should provide an overall evaluation of the IBR and assess whether or not a follow-on review will be required. This decision is based on the Team Leader's assessment of whether the objectives of the IBR have been achieved.

The Team Leader may also want to have the Technical Leads brief their area(s) of expertise. In addition, the Review Facilitator should note to the team any concerns and issues related to the management processes.

4.0 IBR CLOSE-OUT

4.1 General

Once the IBR out-brief is completed, the closeout portion of the IBR process entails the review of all corrective actions (i.e., CARs and action items) identified during the IBR and the establishment of a plan to formally close out the IBR. The customer and supplier should agree on the closure plan of action and identify individuals responsible for all identified risks, CARs, etc. This phase also includes capturing lessons learned from the IBR process. The purpose of closure plan is not to resolve the items, but rather the plan to resolve them. The supplier should submit the closure plan in a timely manner as directed by the Team Leader during the IBR out-brief.

4.2 Reporting IBR Results

The results of the IBR should be reported to the supplier, and an IBR Report or a Letter of Findings can be used to effectively communicate these results. For contractors, the IBR is an event required by the contract, therefore a letter issued by the COR is customarily sent. The Review Facilitator should work with the Team Leader to generate the letter to the supplier. A letter will help to prevent the supplier from claiming that resolving actions resulting from the IBR are out of scope.

The purpose of the letter or report is to summarize all of the concerns that were found during the IBR discussions and to request a corrective action plan from the supplier. The corrective action plan should identify proposed corrective/preventative actions, responsibility assignments, and projected completion dates. Issues that could impact the performance measurement data should also be identified and a copy provided to the appropriate EVMFP member. **Appendix K** contains a template for a Letter of Findings and **Appendix L** contains an IBR Report template. The IBR CARs or a concern area summary spreadsheet would typically be acceptable attachments to the letter. Also, if an IBR report is prepared, it should be included as part of the letter to the supplier.

As an alternative, the customer and the supplier could agree on a corrective action plan immediately after the IBR out-brief to ensure more timely resolution of issues. This will make certain that the concerns are understood and that the IBR team agrees with the corresponding corrective action plan. This can speed resolution of the CARs and closeout of the IBR.

4.3 Tracking Concerns

Tracking the progress in resolving each concern rests with the Team Leader, including the DCMA team representatives located at the contractor's facility, where applicable. The IBR Coordinator should work closely with the IBR Team to ensure that all actions are closed. Regular project reviews are also another good place to have the follow-up on any actions that resulted from the review. Approval of corrective actions rests with the Team Leader, and most likely will be an iterative process.

4.4 IBR Close-out Letter

The Team Leader will approve the close out of the IBR. An IBR closeout letter is sent to the supplier indicating that all CARs are either closed or being tracked and that the IBR is complete. Reporting the results of the IBR may take the form of an informal letter or memo for record, depending on the size and formality of the IBR. See **Appendix M** for a sample IBR Close-out Letter.

4.5 Lessons Learned

After the IBR on-site review and actions have been agreed upon, it is important to poll the IBR participants for lessons learned. This includes the areas that worked well and those where improvements could be made. Lessons learned can come from both the IBR team and the supplier team.

Lessons learned should be forwarded to the NASA EVM Program Executive and organizational EVM Focal Point members who have responsibility for the NASA IBR Handbook. This handbook was developed using best practices from previous IBRs, and are included herein:

- At the discretion of the Team Lead, include the supplier in IBR training and pre-meetings. Joint IBR training allows for joint preparation in the achieving the IBR Goals.
- Ensure a discussion strategy which will be used to conduct the review is identified and agreed to by team members prior to the review meetings (i.e., who will ask questions, who will take notes, etc.). This will ensure that team members understand roles and responsibilities during the discussions.
- Ensure CAM discussions focus on the high dollar and high risk control accounts, unless all control accounts will be reviewed.
- Ensure the IBR team does their homework and has reviewed data specific to their areas prior to the on-site IBR. More structured questions will help to satisfy their understanding of the data, and may also highlight issues before the on-site IBR. This will help ensure the on-site IBR goes smoothly.
- At the discretion of the Team Lead, supplier participation in the daily out-briefs can help to ensure that concerns are clearly communicated and understood. However, it is important to stress that the purpose of the meeting is for team discussion of issues and not for resolution of those issues. If time permits and doesn't disrupt the review schedule, it is permissible to try and resolve issues. Otherwise, it is suggested to discuss after the review.
- Ensure there is adequate time for the CAM discussions and IBR Team caucus afterwards. CAM discussions should not be scheduled for less than two hours to ensure that teams have enough information to answer questions on discussion and CAR forms. Ample time must also be allowed to caucus with team members. If the time allotted for CAM discussions is insufficient, work with the CAM to schedule additional time. This will eliminate the need for side-bar discussions, ensuring that the whole team is aware of the information.
- Provide hard copies of logistics information (i.e. agenda, maps, etc.) to IBR team members as part of the in-brief on the first day of the on-site IBR.
- Ensure that all data has a consistent data date or status date (IPMR, IMS, etc.).
- Ensure clear expectations on what data will be required up-front, roles and responsibilities, how the on-site IBR will be conducted, and what is expected after the review.

- Ensure data is submitted prior to the IBR with adequate time for review and analysis. Three to four weeks is ideal, but no less than two weeks. The more time for the pre-review, the more thorough the analysis and time resolve issues before they become a finding at the on-site IBR.
- Ensure all logistics are taken care of (i.e., directions to include buildings/rooms), security access to facility, avoid escort-required security arrangements, conference room has sufficient seating/tables, outlets/power strips, projector, internet access, room temperature, dedicated room for IBR Team, etc.).
- Ensure the length of the IBR is not dictated by another review or the supplier.
- Ensure CAMs answer questions for the most part, instead of their support personnel.
- Ensure CAM discussions are "show me" versus "tell me".
- Avoid distractions (cell phones, other conversations, conference rooms not reserved for the whole time, etc.).
- Conduct a mock CAM discussion prior to on-site review if time permits.

APPENDIX A: IBR Notification Letter Template

To: <Supplier Contract Officer Name/Supplier Program or Project Manager Name, Company/Organization>

SUBJECT: Notification of Integrated Baseline Review (IBR) and Request for Documentation for <Project Name or Contract #>.

It is the intent of the <Customer Project Name> Project Office and the <Organization or Contractor> to use earned value as a tool in the management of <Project Name or Contract #>. In order to support this effort, a joint IBR will be conducted in accordance with this contract and current NASA requirements on <Date of On-Site Review>. Detailed scope of the IBR, including specific control accounts, will be determined at a later date.

The purpose of the review is to achieve a mutual understanding of the Performance Measurement Baseline (PMB) and its relationship to the Earned Value Management System (EVMS) and management processes. The objectives are to gain insight into cost and schedule risk associated with the contracted effort and to establish confidence in the project's baseline plans. This will be accomplished by jointly evaluating, through discussions with your Control Account Managers (CAMs), the PMB to ensure it captures the entire technical scope, is consistent with contract schedule requirements and has an adequate resource plan. Discussions will focus on the scope of work, work authorization, scheduling, resource allocation and time phasing, Performance Measurement Techniques (PMTs), among other items used to manage the work.

Enclosed is a list of documentation requirements that need to be submitted electronically in their native file format for government review no later than <Date>. Forward all electronic submissions to the IBR Coordinator: <IBR Coordinator Name, Email>. The IBR team requires non-escort badges, team work area/conference room, and access to printers, projectors, internet, and telephones.

The IBR kick-off meeting is scheduled for <Date>. Meeting details will be sent separately. The IBR joint team training is scheduled for <Date>, <Supplier Name> personnel supporting or participating in the IBR are invited. The location is to be determined and will be provided prior to training.

Questions concerning this notification or the IBR may be directed to the PM/IBR Team Lead: <PM/IBR Team Lead Name, Phone, Email> and Government COR: <Name, Phone, Email>.

_____
<PM Name>
Project Manager
<Project Name> Project

Attachment 1: Documentation and Data Request
Attachment 2: Review Team On-site Requirements
Cc: Government COR <Name>, IBR Team Lead <Names>, IBR Team Members <Names>

APPENDIX B: IBR Checklist

IBR Checklist				
Phase 1 - Organizing & Planning				
Checklist Items	**Target Date**	**Done**	**Responsibility**	**Comments**
Determine Need for IBR			Team Lead	
Appoint IBR Coordinator and Facilitator			Team Lead	
Request dollarized RAM from supplier			Team Lead	
Determine CAs to be reviewed			Team Lead	
Identify and assign IBR team members			Team Lead	
Coordinate IBR dates and review agenda with supplier			Coordinator	
Formally notify supplier of IBR and request project data			COR or Coordinator	
Distribute project data to IBR team			Coordinator	
Determine supplier IBR readiness			Team Lead	
Define risk evaluation criteria			Team Lead	
Prepare IBR Team Handbook (electronic or hardcopy)			Coordinator	
Phase 2 - Prepare & Train for the IBR				
Checklist Items	**Target Date**	**Done**	**Responsibility**	**Comments**
Conduct pre-IBR meeting			Team Lead	
Provide EVM Overview/IBR training for team			Facilitator	
Coordinate logistics with team/supplier			Coordinator	
Finalize IBR agenda			Team Lead	
Collect concerns/questions and forward to supplier			Coordinator	
Determine CAM discussion questions			Sub-team Leads	
Phase 3 - On-site IBR Activities				
Checklist Items	**Target Date**	**Done**	**Responsibility**	**Comments**
Present IBR In-brief			Team Lead	
Conduct CAM and other discussions			Sub-team Leads	
Hold daily team status meetings to discuss issues/findings			Team Lead	
Request additional data, as required			Coordinator	
Complete Discussion Assessment Form			Sub-team Leads	
Document concerns using CAR template			Sub-team Leads	
Document action items			Team Lead	
Prepare/present IBR Out-brief			Team Lead	
Phase 4 - Follow-up Activities				
Checklist Items	**Target Date**	**Done**	**Responsibility**	**Comments**
Formally notify supplier of IBR findings			COR	
Document lessons learned			Team Lead	
Monitor CAR and action item progress			Team Lead	
Notify supplier of IBR closure			COR	

APPENDIX C: Dollarized Responsibility Assignment Matrix (RAM)

FLIGHT DEVELOPMENT PROJECT				CAM	BAC ($K)
1	**Flight Development Project**				**72300**
1.1		**Project Management**		CAM 1	**5000**
1.1.1					
1.1.2					
1.2		**Systems Engineering**		CAM 2	**3000**
1.2.1					
1.2.2					
1.3		**Science/Technology**		CAM 3	**2000**
1.3.1					
1.3.2					
1.4		**Safety and Mission Assurance**		CAM 4	**500**
1.4.1					
1.4.2					
1.5		**Payload (s)**			**5000**
1.5.1				CAM 5	1000
1.5.2				CAM 6	4000
1.6		**Aeronautical and Spacecraft Systems**			**12000**
1.6.1				CAM 7	2000
1.6.2				CAM 8	4000
1.6.3				CAM 9	6000
1.7		**Ground System(s)**			**18000**
1.7.1				CAM 10	2000
1.7.2				CAM 11	5000
1.7.3				CAM 12	3000
1.7.4				CAM 13	8000
1.8		**System Integration and Testing**			**5000**
1.8.1				CAM 14	2000
1.8.2				CAM 15	3000
1.9		**Launch Vehicle/Services**			**12000**
1.9.1				CAM 16	4000
1.9.2				CAM 17	3000
1.9.3				CAM 18	5000
1.10		**Mission Operations**			**9000**
1.10.1				CAM 19	2000
1.10.2				CAM 20	7000
1.11		**Education and Public Outreach**		CAM 21	**800**

APPENDIX D: Agenda Example

DATE:

TIME		BLDG/ROOM	ACTIVITIES	RESPONSIBILITY
7:30	8:00		Assembly	All
8:00	10:00		IBR In-brief, Administrative Details, Project/EVM/Business Rhythm Overview	Gov. PM, Contractor PM, Others
10:00	12:00		CAM Discussion 1: <WBS>, <CAM Name>	IBR Team A
10:00	12:00		CAM Discussion 2: <WBS>, <CAM Name>	IBR Team B
12:00	1:00		Lunch	All
1:00	3:00		CAM Discussion 3: <WBS>, <CAM Name>	IBR Team A
1:00	3:00		CAM Discussion 4: <WBS>, <CAM Name>	IBR Team B
3:00	5:00		CAM Discussion 5: <WBS>, <CAM Name>	IBR Team A
3:00	5:00		CAM Discussion 6: <WBS>, <CAM Name>	IBR Team B
5:00	5:30		Day 1 Caucus	Gov. PM, IBR Teams

DATE:

TIME		BLDG/ROOM	ACTIVITIES	RESPONSIBILITY
7:30	8:00		Assembly	All
8:00	10:00		CAM Discussion 7: <WBS>, <CAM Name>	IBR Team A
8:00	10:00		CAM Discussion 8: <WBS>, <CAM Name>	IBR Team B
10:00	12:00		CAM Discussion 9: <WBS>, <CAM Name>	IBR Team A
10:00	12:00		CAM Discussion 10: <WBS>, <CAM Name>	IBR Team B
12:00	1:00		Lunch	All
1:00	3:00		CAM Discussion 11: <WBS>, <CAM Name>	IBR Team A
1:00	3:00		CAM Discussion 12: <WBS>, <CAM Name>	IBR Team B
3:00	5:00		CAM Discussion 13: <WBS>, <CAM Name>	IBR Team A
3:00	5:00		CAM Discussion 14: <WBS>, <CAM Name>	IBR Team B
5:00	5:30		Day 2 Caucus	Gov. PM, IBR Teams

DATE:

TIME		BLDG/ROOM	ACTIVITIES	RESPONSIBILITY
7:30	8:00		Assembly	All
8:00	10:00		CAM Discussion 15: <WBS>, <CAM Name>	IBR Team A
8:00	10:00		CAM Discussion 16: <WBS>, <CAM Name>	IBR Team B
10:00	12:00		CAM Discussion 17: <WBS>, <CAM Name>	IBR Team A
10:00	12:00		CAM Discussion 18: <WBS>, <CAM Name>	IBR Team B
12:00	1:00		Lunch	All
1:00	3:00		IBR Out-brief Preparation	Gov. PM, IBR Teams
3:00	4:00		IBR Out-Brief & Closing Statements	Gov. PM

Note: CAM Discussions include 15-30 minute IBR Team only caucus

APPENDIX E: Sample IBR Questions

The list of sample questions below should serve as a guide to the IBR Team, and does not represent a comprehensive list. It is not the intent for the IBR Team to ask each of these questions verbatim during the CAM discussions. The IBR Team can review the questions below and select the areas relevant for each CAM discussion. Specific question formulation should to be done prior to the IBR.

ORGANIZATION
- What is your scope? (The CAM should be able to refer to a SOW paragraph, a CWBS, or WBS narrative, and a WAD.)
- How many people work for you and what do they do?
- How do they report to you? How do you know the performance status of their work?
- How did you plan the work into control accounts? (The SOW defines the effort. The WBS or CWBS provides specifics, such as work definition. The work authorization and change documentation should show information such as the dollars/hours, period of performance, and description of the scope of work and any changes.)
- How did you ensure that all elements of the scope are planned? (The CAM should be able to show the scope of work broken down into work packages, planning packages, or summary level planning packages and the budgets and ETCs associated with each. The sum of the work packages and planning packages should equal the control account budget. The actual costs plus the ETCs should equal the EAC.)
- How did you obtain the resources for assigned work? (Baseline resources should be identified in the WAD and changes in scope, cost or schedule requirements should be reflected in change request documentation.)
- What process did you use to develop the resources required to accomplish the current plan and how does this differ from the original plan?
- Does you believe that the budget or ETC is sufficient to perform the work? (Review the basis of estimate for reasonableness. Ask the CAM to describe the resource requirement development process.)
- What is the current EAC?
- How was the EAC developed?
- Who reviews updates to the EAC?
- Does the EAC require program manager approval?
- How does the EAC compare to the BAC? (Note: The ETC should be reviewed monthly by the CAM.)
- Elicit a range of possibilities (low and high) that represents as clearly as possible the complete judgment of the CAM as follows: (Ask the CAM the basis of estimate, i.e., results from previous projects, etc. Does the estimate consider past performance and does the EAC reflect the current cost performance trend?)
- Identify risks/opportunities that are included/not included in the baseline.
  a. What are the major risks or challenges remaining to accomplish the CAM's or subcontractor's responsibilities?
  b. Ask the CAM to describe why it is a risk or opportunity.
  c. Exchange ideas about risks or opportunities.
  d. Establish the likelihood of the risk/opportunity event.

- Ask the CAM to explain the risk mitigation plan emphasizing risk mitigation milestones and associated risk performance measurement.
  a. Determine the impact (cost/schedule) for medium and high risks.
  b. Ask the CAM to consider extreme values for the effort (optimistic/pessimistic).
  c. Document results of the Risk Assessment Form.

AUTHORIZATION
- How are you authorized to begin work? (Provide an example of work authorization documentation.)
- Show me your work authorization document(s) which define the work you must accomplish and relate these requirements to the work remaining within your team/WBS element at the time the cost to complete, was analyzed/developed.

BUDGET
- What role did you play in formulating the budget?
- How did you arrive at your budget figures? Do you have the backup or worksheets from which you arrived at your estimates?
- Was there a negotiation process for your budgets? Is your budget adequate?
- How were you advised of budget, tasks, and schedule changes?

CONTROL ACCOUNT
- How many control accounts are you responsible for and what is the total dollar value of your accounts? Show me a control account plan?
- How are your budgets time-phased, and is this reflected in your control account plan?
- How do you status your accounts? How does the performance status of your accounts get into the system?
- Do you have any LOE accounts? Describe the tasks of these accounts.
- Do you have any control accounts that contain a mixture of LOE and discrete effort? What is the highest percentage of LOE within an account that also contains discrete effort?
- How do you open a control account?
- How do you close a control account?
- How can you tell when a control account is opened or closed?
- What reports do you receive that give you cost and schedule progress of your control accounts?

WORK PACKAGE
- What percent of your work is measured or discrete effort? What percent is LOE?
- How does your work package relate to the CWBS or WBS? Discuss with actual examples.
- How are your work package activities related to the IMS or underlying intermediate supporting schedules? Actual examples will support this discussion.
- How was the budget time-phased for each work package? (i.e., what was the basis for the spread?)
- Is the time-phased budget related to planned activities of the work package?
- For the example control account, what is your total budget amount? Of this total budget amount, how much is distributed to work packages and how much is retained in planning packages? Do you have an undistributed budget or management reserve account?

- Do you use interim milestones on any of your work packages to measure Budgeted Cost for Work Performed (BCWP)?
- How do you define a work package?
- What is the difference between a work package and a planning package?
- How many work packages do you have responsibility for?
- What options does your management system provide for taking BCWP? Do your control account plans indicate the method used in taking BCWP?
- How do you know when a work package is opened or closed?
- Have you ever opened work packages earlier than the scheduled start date? If so, how is this accomplished?
- Who prepares the budgets for your work packages?
- Demonstrate how you earn BCWP in the same way that Budgeted Cost for Work Scheduled (BCWS) was planned?
- Can you provide examples of how you measure BCWP or earned value for work-in-process?
- Does anyone review labor hours charged to your work packages?
- Do you ever have mischarges to your work packages? How are these corrected?

PLANNING PACKAGE
- What is the procedure and time frame for developing work packages from the planning packages?
- Are your planning packages time-phased?

SCHEDULE
- What are your schedule responsibilities?
- What schedule milestones did you use in planning the control account(s)? (Ask the CAM to show the team the schedule milestones used in planning the control accounts.)
- How does the current schedule compare with the baseline schedule?
- The CAM should discuss:
    a. Relationships of work packages to milestones.
    b. Schedule interfaces and constraints.
    c. Resource levels to support schedule milestones.
    d. Relationships to other organizations.
    e. Schedule impacts related to other work/organizations.
    f. LOE tasks that support the schedule.
- How did you time-phase the work to achieve the schedule? (All work should be logically planned in compliance with the SOW and schedule.)
- Have you considered risks in developing the plan?
- Have you adequately planned and time-phased resources to meet the plan?
- Do you directly support any major master or intermediate schedule milestones?
- Do you have detailed schedules below the work package?
- How do detailed schedules below the work package support the work package schedules?
- How are you informed by other organizations of changes in their output that may affect your control account schedules? (Horizontal Trace)
- Demonstrate that the progress reflected on the master project schedule or underlying intermediate schedules correlates to the relative progress reflected in the EVMS.

CHANGE CONTROL
- Have you had retroactive changes and/or re-planning efforts to the budget baseline?
- Have you had any changes to your accounts? (Provide an example of how these are handled.)
- Are budget transfers between your accounts and management reserve and undistributed budget traceable? How?
- Do you have any work originally planned for in-house that was off-loaded? How was this accomplished?
- For off-loaded work, was the budget transferred directly, returned to management reserve, or to undistributed budget?

EARNED VALUE
- Is progress toward accomplishing identified and planned activities used to determine earned value? If yes, describe the process. If no, how is earned value assessed?
- What type(s) of PMT indicators have been assigned by you?
- Is the PMT chosen appropriate for the type of work being performed?
- Does the PMT chosen objectively measure performance?
- Does the earned value assessment correlate with technical achievement?
- What methods and tools does the CAM use in administering the plan? (Some examples are weekly or monthly earned value reports; master, intermediate, and detail schedules; periodic meetings; independent assessments of technical progress, etc.)
- Determine how changes are incorporated. Evaluate the effect of changes on performance measurement information. Assess whether changes are done in accordance with the EVM system description or documented management processes.
- What formal training have you had in EVM?
- Do you feel you have had adequate training or do you need more?

ESTIMATE AT COMPLETION (EAC)
- What does EAC mean to you? How do you arrive at an EAC?
- How often is your EAC reviewed and revised?
- What guidance or instructions did you receive from management in order to develop your EAC?
- If written instructions were provided, what were these and who authored them?
- Define the work remaining within your WBS element at the time the cost to complete was analyzed/developed. Identify effort to be performed by major subcontractors.
- How did you determine the effort or resource amounts required to complete the remaining work?
- Outline the steps you took to arrive at your estimate.
- What project/performance risks have been considered in your estimate?
- What performance level was assumed and why?
- How does the projected performance level compare to your experienced level of performance?
- Explain how EAC's calculated for material?
- Demonstrate that your EAC is segregated by labor, material, and other direct charge categories.
- What current and future events and performance factors have been included in your current cost to complete? (Examples: task changes, make-buy decisions, performance factors, etc.)

- Describe and demonstrate how you projected the cost to complete over the time remaining.
- Discuss your management's involvement in developing the estimate of the cost remaining to complete your program tasks.

SUBCONTRACTOR/EXTERNAL WORK

- Are you responsible for any subcontracts? If so, what are they? How do you monitor performance on these? How do you take BCWP?
- How are subcontracts managed? (Ask the Subcontracts Manager to describe the process for managing subcontractor earned value.)
- What criteria determine whether a subcontract or a purchase order is used? What types of subcontracts exist or plan to be negotiated? (fixed price vs. cost plus).
- What are the major challenges or risks to the subcontractor in accomplishing project responsibilities? Are these items tracked by the Project Management Office or Functional Manager in a risk register or plan?
- What subcontractor technical, schedule and cost reports are required to be submitted to you or your team?
- What is your total budget? (For each subcontract and the corresponding control accounts). How is profit or fee included in your budget?
- How was the budget established? Does it reflect an achievable value for the resources to fully accomplish the control account scope of effort?
- What rationale was used to time phase the budget into planning packages, tasks, work packages or summary activities?
- Are the time phased budget resources consistent with your integrated master schedule? (Show the trace from your control account to intermediate or master schedules.)
- When are you required to detail plan planning packages or summary activities? What schedule document or system is used to develop detail planning for your control account?
- How do you know that the work within your control accounts to be performed by subcontractor has been properly planned?
- How do you check the status and performance of work on your control account by a subcontractor? How are actual costs recorded against your control account?
- What techniques are available for determining earned value? Explain the application of each technique.
- How and when is risk assessment or risk management plan updated for technical/schedule/cost risk items affecting your control account?
- How and when is the actual and forecast schedule update provided for your control account effort?
- Are variance analysis thresholds or requirements established for reporting technical, schedule or cost variances to planned goals established for your control accounts? Do you informally/formally report the cause of variance, impact or corrective action for these variances?
- What is your current EAC? How often is it updated? Does your EAC reflect current cost performance trend?
- What document authorizes you to begin work on a subcontract?
- For selected work packages, what specific outputs, products, or objectives are to be accomplished?
- What is specifically needed by you from other CAMs to generate subcontractor outputs or products? How do you monitor its progress?

- Who specifically needs the subcontractor outputs or products to perform their program functions? How do you status others on the progress of your outputs to them?
- Specifically, what technical items are currently producing the greatest risk to achieving technical, schedule or cost goals? Are these items reviewed as part of a risk assessment, management plan or other reporting tool to your project management office?
- How do you determine whether the reported cost variance is due to subcontractor effort or a company overhead rate?
- How are material budgets planned? How do you track material prior to delivery? How do you track material when deliveries are late?
- When is BCWP taken on material? How much BCWP is earned when material is withdrawn from inventory or received?

ANALYSIS
- Do you have any variance thresholds on your control accounts? If so, what are they?
- How do you know when you have exceeded a threshold?
- How do rate changes affect your control accounts?
- Who is responsible for rate variance analysis?
- Will an account accept BCWP or Actual Cost of Work Performed (ACWP) if there is no BCWS?
- How do you know when you must prepare a variance report?
- Do you have samples of any variance analysis reports?
- Do these show a statement of problem, the variance, cause, impact and proposed corrective action?
- Who receives your variance reports?
- What action is taken on the reports?
- Which reports do you use most frequently? Why?
- How are data anomalies identified and corrected?

OTHER
- How are you reporting labor, material, and other direct costs?
- Has your effort been impacted by any directed or contractual change?
- When did you receive authorization to proceed with the change and how did you incorporate the change in your plan (schedule and budget time phasing)?
- What changes have been made to the control account planning (technical definition of scope, schedule, budget resources, ETCs)?
- What documents are involved in a change to a control account's scope of work, schedule, budget, or ETC?
- Did you re-phase or re-plan work? In process work? Completed work? Unopened work packages? Make current period or retroactive changes?
- Did you transfer budget between control accounts?
- How have contract changes or other changes been incorporated into the control account?
- If one of the control accounts had an unfavorable cost or schedule variance did you re-plan or request management reserve to reduce or eliminate the variance?

APPENDIX F: Discussion Assessment Form

IBR Discussion Assessment

LOG#: _____

IBR Team: _____   Date: _____

CAM/Sub-Team Technical Lead: _____

WBS/Control Account: _____

1. TECHNICAL SCOPE (Statement of Work):
    - _____ Is there adequate identification, definition, and flow down?
    - _____ Consistent with contract requirements?
    - _____ Adequate assignment of responsibility, authority and accountability?

2. SCHEDULE   Period of Performance: _____
    - _____ Realistic planned durations?
    - _____ Logical sequence of work planned?
    - _____ Consistent with intermediate/master schedule?
    - _____ Significant interdependencies, interfaces, and constraints?
    - _____ Support contract milestones?

3. COST AND RESOURCE RISK
    - _____ Sound BOE?
    - _____ Budget reasonableness (time phasing, levels, mix, type)?
    - _____ Budget adequacy (time phasing, levels, mix, type)?
    - _____ Resource availability?
    - _____ Adequate budget, etc. values assigned?
    - _____ Provisions for scrap, rework, retest or repair, if applicable?

4. MANAGEMENT PROCESS RISK
    - _____ Integrated cost/schedule/technical planning?
    - _____ Baseline change control?
    - _____ Accurate and timely management/performance data?
    - _____ Adequate determination and maintenance of EACs?
    - _____ Adequate subcontract management?
    - _____ Risk management process documents risk associated with the PMB?
    - _____ Appropriate planned PMTs?
    - _____ Objective determination of progress?
    - _____ Methods correlate with technical achievement?

5.   Brief Summary of Discussion

6.   Concern Area Report (CAR) prepared?

7.   Document specific risks

IBR Concern Area Report (CAR)

Log #:_____   Date: _____

WBS/CA Name: _____

Submitted by: _____

Subject of Finding:

<Explain root problem and cause. Provide impact assessment. Quantify problem and impacts where possible. Provide recommended actions and exit criteria for resolution. Attach exhibits if applicable. Provide reference to control account or work package number.>

Supplier's/In-house Project's response:

<Address root cause of the problem, impact, corrective/preventative action plan; identify dates and POC. Identify exit criteria for corrective action.>

APPENDIX H: Documentation Request Form

Documentation Request

Log #: _____

Submitted by: _____   **Date:** _____

1.   WBS/Control Account(s):

2.   Document Description or Type:

3.   Reason for Request:

4.   Comments:

APPENDIX I: Risk Evaluation Criteria

The IBR Out-brief should include the five types of risks for an IBR: Risks can generally be categorized into the following five areas: technical, schedule, cost, resource, and management processes. The following are brief discussions of each of the types of risk.

Technical Risk - The ability of the project's technical plan to achieve the objectives of the scope of work. Technical risk includes the effects of available technology, software development capability, design maturity, etc.

Schedule Risk - The adequacy of the time allocated for performing the defined tasks to successfully achieve the project schedule objectives. Schedule risk includes the effects on the schedule of the interdependency of scheduled activities to achieve project milestones and support the PM's ability to identify and manage the critical path.

Cost Risk - The ability of the PMB to successfully execute the project and attain cost objectives, recognizing the relationship between budget, resources, funding, schedule, and scope of work. The quality of the estimates affects the cost risk, which includes the assumptions used for both estimates and resource allocation on the budgets for work items.

Resource Risk - The availability of personnel, facilities, and equipment, when required, to perform the defined tasks needed to execute the program successfully. Resource risk includes the effect of external factors such as loss of availability to competing programs or unexpected downtime that could preclude or otherwise limit the availability of the resources needed to complete planned work.

Management Processes Risk - The degree to which the management processes provide effective and integrated technical/schedule/cost planning and baseline change control. The risk associated with the management processes being used includes the ability to establish and maintain valid, accurate, and timely performance data, including data from subcontractors, for early visibility into risks.

Project Risk Analysis

What is the **likelihood** the risk will happen?

Lvl	Likelihood	Planned approach and processes
1	Not likely	Will effectively avoid or mitigate this risk based on standard practices
2	Low likelihood	Have usually mitigated this type of risk with minimal oversight in similar cases
3	Likely	May mitigate this risk, but workarounds will be required
4	Highly likely	Cannot mitigate this risk, but a different approach might
5	Near certainty	Cannot mitigate this type of risk, no known processes or workarounds are available

Given the risk is realized, what would be the magnitude of the impact?

Lvl	Technical	Schedule	Cost
1	Minimal or no impact	Minimal or no impact	Minimal or no impact
2	Minor performance shortfall, same approach retained	Additional activities required, able to meet key dates	Budget increase or unit production cost increase <1%
3	Moderate performance shortfall, but workarounds available	Minor schedule slip, will miss need date	Budget increase or unit production cost increase <5%
4	Unacceptable, but workarounds available	Program critical path affected	Budget increase or unit production cost increase <10%
5	Unacceptable, no alternatives exist	Cannot achieve key program milestone	Budget increase or unit production cost increase >10%

Resource Risk - Evaluation Criteria:

Excellent (Green) – Has little potential to cause disruption of schedule, increased cost, or degradation of performance. Normal supplier effort and normal customer monitoring will probably be able to overcome difficulties.

Adequate (Yellow) – Can potentially cause some disruption of schedule, increased cost, or degradation of performance. Special supplier emphasis and close customer monitoring will probably be able to overcome difficulties.

Poor (Red) – Likely to cause a significant disruption of schedule, increased cost, or degradation of performance. Risk may be unacceptable even with supplier or emphasis and close customer monitoring.

Management Processes Risk - Evaluation Criteria:

Excellent (Green) - Processes are in place for baseline maintenance, risk management, scheduling, EAC updates, subcontract management and managerial analysis. PMTs are appropriate, provide objective determination of progress, and correlate with technical achievement. These processes are

formally documented and are being used to manage the program. Few issues have been identified with the processes or how they are being applied. Management processes will provide timely and accurate performance data. Has little potential to cause disruption of schedule, increased cost, or degradation of performance. Normal supplier effort and normal customer monitoring will probably be able to overcome difficulties.

Adequate (Yellow) – Most, but not all, processes are in place for baseline maintenance, risk management, scheduling, EAC updates, subcontract management and managerial analysis. PMTs could be more objective and correlate more closely with technical achievement. Some processes are not fully documented. Discussions indicate that the CAMs are not correctly using the management processes. There are concerns that the management processes may hinder timely and accurate performance data. Can potentially cause some disruption of schedule, increased cost, or degradation of performance. Special supplier emphasis and close customer monitoring will probably be able to overcome difficulties.

Poor (Red) – Few management processes are in place for baseline maintenance, risk management, scheduling, EAC updates, subcontract management and managerial analysis. PMTs are subjective and do not correlate with technical achievement. Processes are not documented. Discussions indicate that the CAMs are not using the management processes. There are concerns that the management processes will prevent accurate and timely performance data. Likely to cause a significant disruption of schedule, increased cost, or degradation of performance. Risk may be unacceptable even with supplier emphasis and close customer monitoring.

A format for assessment by process area is shown below and may be a helpful tool to the team in characterizing and consolidating management process findings. This format can also be used to support the IBR Findings Letter or IBR Report.

Management Process Area	Deficiency				
	Low	Moderate	High	No Deficiencies	Best Practice
Organization					
Work Authorization					
Scheduling					
Budgeting					
Status/Updates					
Management Analysis					
Change Control					
EAC and Risk Management					
Accounting					
Indirect Management					
Material Management					
Contract/Subcontract Mgmt.					
Training					
Total					

(green)	Low (No CAR)
(yellow)	Moderate (Could warrant a CAR)
(red)	High (Should have corresponding CAR)
(blue)	No Deficiencies
(purple)	Best Practice

APPENDIX J: Logs (examples only, tailor as needed)

Action Item Log

CAR #	CAM / Manager	WBS/CA	Brief Description	Action Description	Responsible Team Member	Target Close

CAM Discussion Log

CAM / Manager	Responsible Area	Discussion Eval #	Risk Eval #	Document Request #'s	CAR #'s	Sub-team Lead

APPENDIX K: IBR Letter of Findings Template

To: <Supplier Contract Officer Name/Program or Project Manager Name, Company/Organization>

Subject: Notification of Integrated Baseline Review (IBR) Findings for <Project Name or Contract #>.

The <Project Name> IBR Team conducted an Integrated Baseline Review (IBR) of contract <Contract #> at your facility in <Supplier Address> during <Date of IBR>. The team identified areas of concern, requests for documents and provided risk assessment as contained in attachment (1), Concern Area Reports.

Status on action items and documentation requested should be directed to <IBR Coordinator Name> at <Phone Number & Email>. All requests should be completed by <Date>, unless other arrangements are made with <Review Team Lead Name> at <Phone Number & Email>.

Any contractual questions should be directed to <Project COR Name> at <Phone Number & Email> and earned value management questions should be directed to <Review Team Lead Name> at <Phone Number & Email>.

Regards,

_____

<PM Name>
Project Manager

<Project Name> Project

Attachment 1: Concern Area Reports

Cc: Government COR, Review Team Lead, Review Team Members

APPENDIX L: IBR Report Template

<Project, Contract#> IBR Report

1. **Introduction.** Identify the contract purpose, type, duration, amounts (total, ceiling price, target costs, etc.), the project being supported, and the cognizant government component. Also, identify the specific contract requirement for an EVMS.

2. **Purpose.** Identify the purpose of the review.

3. **Scope.** Identify the specific contractual entity that is the subject of this review; for example, division, company, plant, and the functional organizations, such as engineering, manufacturing, quality assurance, or individual process teams. Discuss whether the review is related to development, production, or construction contract. Identify CWBS areas covered, the methodology used in conducting the review, indicating such items as range of CAM discussions, depth of review, documents examined, and traces conducted. Team members and their associated responsibilities should be identified in this section.

4. **Findings.** Identify areas of concern including a complete discussion of condition, cause and effect.   If the concerns are not resolved by the time the report is written, a schedule for their resolution should be attached. During the course of the review, if concerns surfaced relative to the EVMS and its processes, these should be communicated to the appropriate personnel for proper resolution.

5. **Conclusions and Recommendations.** This portion of the report contains any conclusions and recommendations based on review findings. This should include any action items and, if applicable, specific areas needing further review.

APPENDIX M: IBR Close-out Letter Template

Date: <Current Date>

Company: <Company Name, Address>

Attention: <Supplier Contract Officer Name/Program or Project Manager, Organization>

Subject: Notification of Integrated Baseline Review (IBR) Closure

The <Project Name> IBR Team conducted an Integrated Baseline Review (IBR) of contract <Project Name or Contract #> at your facility in <Address> during <IBR Dates>.

All actions resulting from Concern Area Reports (CARs) from this review are closed, and/or have been agreed upon by all parties.

Any contractual questions should be directed to the COR: <Name, Phone, Email> and EVM/IBR questions should be directed to the IBR PM/Team Lead: <Name, Phone, Email>.

Regards,

_____
<PM Name>
Project Manager

<Project Name> Project

APPENDIX N: Acronyms

ACO	Administrative Contracting Officer
ACWP	Actual Cost of Work Performed
BAC	Budget at Completion
BCWP	Budgeted Cost for Work Performed
BCWS	Budgeted Cost for Work Scheduled
CAM	Control Account Manager
CAP	Control Account Plan
CBB	Contract Budget Baseline
CCB	Change Control Board
COR	Contracting Officer Representative
CPI	Cost Performance Index
CPR	Contract Performance Report
CWBS	Contract Work Breakdown Structure
DCMA	Defense Contract Management Agency
EIA-748	Electronic Industries Alliance-748
EAC	Estimate at Completion
ETC	Estimate to Complete
EVM	Earned Value Management
EVMFP	Earned Value Management Focal Point
EVMS	Earned Value Management System
EVMWG	Earned Value Management Working Group
FAD	Formulation Authorization Document
IBR	Integrated Baseline Review
IMS	Integrated Master Schedule
IPMR	Integrated Program Management Report
KDP	Key Decision Point
LOE	Level of Effort
MDAA	Mission Directorate Associate Administrator
MR	Management Reserve
NASA	National Aeronautics and Space Administration
NASA FAR	NASA Federal Acquisition Regulation
NDIA	National Defense Industry Association
NFS	NASA FAR Supplement
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
OBS	Organization Breakdown Structure
OCE	Office of Chief Engineer
P-CAM	Project-Control Account Manager
PDR	Preliminary Design Review

PMB	Performance Measurement Baseline
RAM	Responsibility Assignment Matrix
RFP	Request for Proposal
SOW	Statement of Work
SP	NASA Special Publication
SRB	Standing Review Board
TOR	Terms of Reference
UB	Undistributed Budget
UFE	Unallocated Future Expense
WAD	Work Authorization Document
WBS	Work Breakdown Structure

APPENDIX O: Glossary

Actual Cost of Work Performed (ACWP). The costs actually incurred and recorded in accomplishing the work performed within a given time period. Actual costs include the direct cost plus the related indirect cost such as overhead, general and administrative, etc. allocated to the activity. (Also known as Actual Cost).

Administrative Contracting Officer (ACO). The individual within the Defense Contract Management Agency (DCMA) Contract Management Office (CMO) responsible for ensuring that the functions described in NFS 1842.302 are completed by the contractor in accordance with the

Budget at Completion (BAC). The sum of all budgets (BCWS) allocated to the project or a given Control Account. It is synonymous with the term Performance Measurement Baseline.

Budgeted Cost for Work Performed (BCWP). The sum of budgets for completed work packages and partially completed work packages, plus the appropriate portion of the budgets for level of effort and apportioned effort work packages. (Also known as Earned Value)

Budgeted Cost for Work Scheduled (BCWS). The sum of the budgets for all work packages, planning packages, etc., scheduled to be accomplished (including in-process work packages), plus the amount of level of effort and apportioned effort scheduled to be accomplished within a given time period. This is the value of planned work. (Also known as Planned Value)

Change Control Board (CCB). The CCB is a committee that makes decisions on whether proposed changes to project baselines (technical, schedule or cost) should be accepted.

Contract Budget Base (CBB). The sum of the negotiated contract cost plus the estimated cost of authorized unpriced work. It includes the PMB and MR. Customer approval is generally required to change it. (See also Project Budget Base.)

Contract Performance Report (CPR). See Integrated Program Management Report (IPMR).

Contract Work Breakdown Structure (CWBS). A work breakdown structure of the products or services to be furnished under contract. It is comprised of selected Project WBS elements specified in the contractual document and the contractor's lower level extensions of those elements.

Control Account. A management control point at which budgets (resource plans) and actual costs are accumulated and compared to earned value for management control purposes. A control account is a natural management point for planning and control since it represents the work assigned to one responsible organizational element (or integrated product team) for a single WBS element.

Control Account Manager. See Project Control Account Manager (P-CAM).

Control Account Plan (CAP). A format upon which a control account plan is displayed. A CAP typically displays the control account scope and budget in time-phased work packages and planning packages, cost element visibility, PMTs for each work package, responsible performing organizations and at least one charge number.

Defense Contract Management Agency (DCMA). The Department of Defense (DoD) component that works directly with Defense suppliers to help ensure that DoD, Federal, and allied government supplies and services are delivered on time, at projected cost, and meet all performance requirements. As the DoD Executive Agent for EVMS, DCMA is responsible for ensuring the integrity and application effectiveness of contractor EVMS. The NASA Program/Project contracting officer will normally delegate the responsibility for verifying a supplier's initial and continuing compliance with EIA -748 guidelines to the designated DCMA Administrating Contracting Officer (ACO) assigned to a DCMA Contract Management Office (CMO).

Earned Value Management (EVM). A tool for measuring and assessing project performance through the integration of technical scope with schedule and cost objectives during the execution of the project. EVM provides quantification of technical progress, enabling management to gain insight into project status and project completion costs and schedules. Two essential characteristics of successful EVM are EVM system data integrity and carefully targeted monthly EVM data analyses (i.e., risky WBS elements).

Earned Value Management Focal Point (EVMFP). The EVM subject matter expert at each NASA center/organization that serves as the point of contact for coordination and exchange of information on EVM. The EVMFP is responsible for effective policy implementation within their component, ensuring consistency with NASA policy and the provisions of this guide.

Earned Value Technique (EVT). See Performance Measurement Technique (PMT).

Earned Value Management Working Group (EVMWG). A group consisting of the EVM Subject Matter Experts from each center other subject matter experts to facilitate Agency-wide communication, consistency, and lessons learned related to implementing and using EVM.

Earned Value Management System (EVMS). The integrated set of policies, processes, systems and practices that meet an organization's implementation of EIA-748. An integrated management system and its related subsystems that allow for planning all work scope to completion; assignment of authority and responsibility at the work performance level; integration of the cost, schedule, and technical aspects of the work into a detailed baseline plan; objective measurement of progress (earned value) at the work performance level; accumulation and assignment of actual costs; analysis of variances from plans; summarization and reporting of performance data to higher levels of management for action; forecast of achievement of milestones and completion of events; forecast of final costs; and disciplined baseline maintenance and incorporation of baseline revisions in a timely manner.

Electronic Industries Alliance (EIA) -748. The Institute that oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector. This organization is also actively engaged in accrediting programs that assess conformance to standards—including globally-recognized cross-sector programs such as the ISO 9000 (quality) and ISO 14000 (environmental) management systems. The Earned Value Management System guidelines have been published as an EIA standard. The set of 32 guidelines defines the requirements the contractor's EVM system should meet.

Estimate at Completion (EAC). A value (expressed in dollars and/or hours) developed to represent a realistic projection of the final cost of a task (or group of tasks) when completed. EAC is the sum

of direct and indirect costs to date, plus the estimate of costs for all authorized remaining work. EAC = Inception to date ACWP + ETC

Estimate to Complete (ETC). A value (expressed in dollars and/or hours) developed to represent a realistic projection of the "to go" cost of the unaccomplished work to complete a task.

Formulation Authorization Document (FAD). The document issued by the MDAA (or MSOD) to authorize the formulation of a program whose goals will fulfill part of the Agency's Strategic Plan, Mission Directorate Strategies, or Mission Support Office Functional Leadership Plans. In addition, a FAD or equivalent is used to authorize the formulation of a project.

Integrated Baseline Review (IBR). A risk-based review conducted by Program/Project Management to ensure mutual understanding between the customer and supplier of the risks inherent in the supplier's PMB and to ensure the PMB is realistic for accomplishing all the authorized work within the authorized schedule and budget.

Integrated Master Schedule (IMS). An integrated schedule developed by logically networking all detailed program/project activities. The highest level schedule is the Master Schedule supported by Intermediate Level Schedules and by lowest level detail schedules. See IPMR Format 6.

Integrated Program Management Report (IPMR). The standard government report format to report monthly cost/schedule performance and status. Projects will use the following formats:

- Format 1: provides data to measure cost and schedule performance by product-oriented WBS elements, the hardware, software, and services the Government is buying.
- Format 2: provides the same data by the contractor's organization (functional or Integrated Product Team (IPT) structure).
- Format 3: provides the budget baseline plan against which performance is measured.
- Format 4: provides staffing forecasts for correlation with the budget plan and cost estimates.
- Format 5: is a narrative report used to explain significant cost and schedule variances and other identified contract problems and topics.
- Format 6: IMS
- Format 7: time-phased historical and forecast cost submission.

Joint Cost and Schedule Confidence Level (JCL). (1) The probability that cost will be equal to or less than the targeted cost AND schedule will be equal to or less than the targeted schedule date. (2) A process and product that helps inform management of the likelihood of a project's programmatic success. (3) A process that combines a project's cost, schedule, and risk into a complete picture. JCL is not a specific methodology (e.g., resource-loaded schedule) or a product from a specific tool (e.g., @RISK).

Key Decision Point (KDP). The event at which the decision authority determines the readiness of a program/project to progress to the next phase of the life cycle (or to the next KDP).

Level of Effort (LOE). Effort of a general or supportive nature that does not produce definite end products. Examples include supervision, program administration and contract administration.

Management Reserve (MR). An amount of the total allocated budget withheld for management control purposes rather than designated for the accomplishment of a specific task or a set of

Mission Directorate Associate Administrator (MDAA). Responsible for managing programs within the Mission Directorate; recommends the assignment of programs and Category 1 projects to centers; assigns Category 2 and 3 projects to centers; serves as the KDP Decision Authority for Category 2 and 3 projects; and has responsibility for all programmatic requirements.

NASA Procedural Requirements (NPR). Agency mandatory instructions and requirements to implement NASA policy as delineated in an associated NPD.

NASA Policy Directive (NPD). Agency policy statements that describe what is required by NASA management to achieve NASA's vision, mission, and external mandates and describe who is responsible for carrying out those statements.

NASA Structure Management (NSM). The NSM is the internal coding schema used by the Agency to define and organize project work content. The WBS with its NSM nomenclature provides a common management framework for project management decisions and communication, the definition and authorization of work, the development of project schedules, and the planning and allocation of resources. This same coding system is also used to account for all financial activities associated with funds appropriated by Congress to accomplish project work.

Office of the Chief Engineer (OCE). The Chief Engineer is the principal advisor to the NASA Administrator on the technical readiness, review, and execution of NASA programs and projects. The OCE ensures that NASA missions are planned and conducted with sound engineering practices and proper controls and management. The OCE is responsible for EVM policy and guidance.

Organizational Breakdown Structure (OBS). The project hierarchy of line and functional organizations as applied to the specific project.

Performance Measurement Baseline (PMB). The time-phased budget plan against which performance is measured. It is formed by the budgets assigned to scheduled control accounts and the applicable indirect budgets. For future effort, not planned to the control account level, the PMB also includes budgets assigned to higher level WBS elements and undistributed budgets. It equals the total allocated budget less management reserve.

Performance Measurement Technique (PMT). The method or "algorithm" used to calculate earned value at the work package level.

Planning Package (PP). A logical aggregate of far-term effort within a control account that can be identified and budgeted, but not yet defined into discrete Work Packages.

Program. A strategic investment by a Mission Directorate or Mission Support Office that has a defined architecture and/or technical approach, requirements, funding level, and a management structure that initiates and directs one or more projects. A program defines a strategic direction that the Agency has identified as critical.

Program Plan. The document that establishes the program's baseline for implementation and is signed by the MDAA, Center Director(s), and program manager.

Project. A specific investment having defined goals, objectives, requirements, life-cycle cost, a beginning, and an end. A project yields new or revised products or services that directly address NASA's strategic needs. They may be performed wholly in-house; by Government, industry, academic partnerships; or through contracts with private industry.

Project Control Account Manager (P-CAM). A NASA manager responsible for task performance of a Control Account within the PMB and for planning and managing the resources authorized to accomplish such task.

Project Plan. A detailed plan which, when formally approved, sets forth the agreement between a program manager and project managers, and defines the guidelines and constraints under which the project will be executed.

Request for Proposal (RFP). A solicitation used in negotiated acquisitions to communicate government requirements to prospective contractors and solicit proposals.

Responsibility Assignment Matrix (RAM). A chart showing the relationship between the CWBS elements and the organizations assigned responsibility for ensuring their accomplishment. The RAM normally depicts the assignment of each control account to a single manager, along with the assigned budget.

Statement of Work (SOW). A document that contains a narrative description of the work scope requirements for a project or contract.

Suppliers. Each project office is a customer having a unique, multi-tiered hierarchy of suppliers to provide it products and services. A supplier may be a contractor, grantee, another NASA Center, university, international partner, or other government agency. Each project supplier is also a customer if it has authorized work to a supplier lower in the hierarchy.

Unallocated Future Expense (UFE). The portion of estimated cost required to meet specified JCL that cannot yet be allocated to the specific project WBS sub-elements because the estimate includes probabilistic risks and specific needs that are not known until these risks are realized. Typically not part of PBB unless allocated to the project in conjunction with a formal change to the PBB.
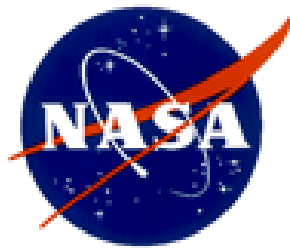
Undistributed Budget (UB). Budget associated with specific work scope or authorized changes that have not been assigned to a control account or lower level WBS element.

Work Authorization Document (WAD). A form used to document authorized and budgeted work from the Project Manager or Sub-project/Element Manager. As a minimum this document must include the relevant WBS Control Account code, statement of work, scheduled start and completion dates, budget, and the name of the P-CAM.

Work Breakdown Structure (WBS). The product-oriented hierarchical breakdown or division of hardware, software, services and other work tasks that organizes, displays, and defines the products to be developed and/or produced and relates the elements of the work to be accomplished to each other and the end products.

Work Package (WP). A detail, short duration task or material item identified by the Project Control Account manager for accomplishing a Control Account task. A work package has the following characteristics:

- Represents unit of work at the level where work is performed.
- Clearly separate from other Work Packages.
- Assignable to a single organizational element.
- Start and completion dates and interim milestones represent physical accomplishment.
- Has budget expressed in terms of dollars or hours/FTEs.
- Its duration is limited to a relatively short span.
- Is integrated with detailed engineering, shop, or other schedules.
- Has a correct Earned Value Technique assigned to it.

National Aeronautics and Space Administration
NASA Headquarters
Washington, D.C. 20546